

Serial No. 10/627,894

Docket No. - AXD 0001 I3 (01-SM5-218 C)

Amendments to the Claims

The following listing of claims will replace all prior versions, and listings, of claims in the present application:

1. (Currently Amended) A process for making a ~~fluorine-free~~ plasma cured material comprising:
 - providing a Si-containing porous dielectric material having a first dielectric constant, having a first elastic modulus, and having a first material hardness; and
 - plasma curing the porous dielectric material with a fluorine-free plasma gas to produce a ~~fluorine-free~~ plasma cured porous dielectric material having a second dielectric constant which is less than or about equal to the first dielectric constant, having a second elastic modulus which is greater than the first elastic modulus, and having a second material hardness which is greater than the first material hardness, wherein the fluorine-free plasma gas comprises a combination of CH₄ plasma gas and N₂ plasma gas.
2. (Original) The process of claim 1 wherein the porous dielectric material is selected from an organic dielectric material, an inorganic dielectric material, or a combination thereof.
3. (Curently Amended) The process of claim [[2]]1 wherein the ~~organic~~porous dielectric material is selected from a hydrogen silsesquioxane dielectric material, a methylsilsesquioxane dielectric material, or a combination thereof.
4. (Original) The process of claim 1 wherein the porous dielectric material is produced by depositing a dielectric coating on a substrate using a spin-on process or a chemical vapor deposition process, and
 - forming pores in the coating.
5. (Original) The process of claim 1 wherein the porous dielectric material is selected from a ~~porogen~~generated porous dielectric material, a solvent-formed porous dielectric material, a molecular engineered porous dielectric material, or a combination thereof.

Serial No. 10/627,894
Docket No. - AXD 0001 I3 (01-SM5-218 C)

6. (Original) The process of claim 1 wherein the porous dielectric material is plasma cured at a temperature less than or about 450°C.
7. (Original) The process of claim 1 wherein the porous dielectric material is plasma cured at a temperature between about 250°C and about 450°C.
8. (Original) The process of claim 1 wherein the porous dielectric material is plasma cured at a process pressure between about 1.0 Torr and about 5.0 Torr.
9. (Original) The process of claim 1 wherein the porous dielectric material is plasma cured for a time less than or about 180 seconds.
10. (Original) The process of claim 1 wherein the fluorine-free plasma gas further comprises H₂ plasma gas.
11. (Original) The process of claim 1 wherein the fluorine-free plasma gas further comprises a noble gas.
12. (Original) The process of claim 11 wherein the noble gas is selected from He, Ar, Ne, or combinations thereof.
13. (Original) The process of claim 1 wherein the fluorine-free plasma gas defines a gas ratio of CH₄ to N₂, and wherein the gas ratio is about 0.01 to about 0.05.
14. (Currently Amended) The process of claim 1 wherein the increase in elastic modulus between the first elastic modulus of the porous dielectric material and the second elastic modulus of the ~~fluorine-free~~ plasma cured porous dielectric material is greater than or about 50%.

Serial No. 10/627,894

Docket No. - AXD 0001 I3 (01-SM5-218 C)

15. (Currently Amended) The process of claim 1 wherein the increase in elastic modulus between the first elastic modulus of the porous dielectric material and the second elastic modulus of the ~~fluorine-free~~ plasma cured porous dielectric material is greater than or about 100%.

16. (Currently Amended) The process of claim 1 wherein the second elastic modulus of the ~~fluorine-free~~ plasma cured porous dielectric material is greater than or about 3 GPa.

17. (Currently Amended) The process of claim 1 wherein the second elastic modulus of the ~~fluorine-free~~ plasma cured porous dielectric material is between about 3 GPa and about 10 GPa.

18. (Currently Amended) The process of claim 1 wherein the increase in material hardness between the first material hardness of the porous dielectric material and the second material hardness of the ~~fluorine-free~~ plasma cured porous dielectric material is greater than or about 50%.

19. (Currently Amended) The process of claim 1 wherein the second material hardness of the ~~fluorine-free~~ plasma cured porous dielectric material is greater than or about 0.3 GPa.

20. (Currently Amended) The process of claim 1 wherein the second material hardness of the ~~fluorine-free~~ plasma cured porous dielectric material is between about 0.5 GPa and about 1.0 GPa.

21. (Currently Amended) The process of claim 1 wherein a level of outgassing of the ~~fluorine-free~~ plasma cured porous dielectric material is significantly reduced or eliminated as compared to a thermal cured Si-containing porous dielectric material.

22-26. (Canceled)

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